

REMARKS

Applicant thanks Examiner for the detailed review of the application. Claims 1-3, 8-9, and 13-17 have been amended while new claims 28-30 have been added.

Claim Objections

The Office Action states:

2. Claim 25 is objected to because of the following informalities: There is an empty space between “resumed” and the following semicolon. Therefore, on claim 25, line 2, “resumed ;” should be amended to “resumed;”. Appropriate correction is required.

Applicant has amended claim 25 to remove the empty space as suggested by The Office Action.

Claim Rejections -35 USC § 103(a)

The Office Action states:

3. **Claims 1, 3-4, 10-12, 14-15, 17-18, 20-21, 23-25, and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ozur et al. (hereinafter Ozur) (US 5,247,676) in view of Hogle et al. (hereinafter Hogle) (US 6,560,626 B1).**

“The examiner bears the initial burden of factually supporting any *prima facie* conclusion of obviousness.” MPEP § 2142. It is well established that *prima facie* obviousness is only established when three basic criteria are met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. *In re Vaeck*, 947 F.2d 488 (Fed. Cir. 1991) (MPEP 2144). The Office Action has failed to meet one or more of these requirements.

Applicant’s amended claim 1 includes: “trigger-response mechanism that includes at least

one bank of **user-programmable registers to identify a user-defined trigger event.**” (amended claim 1 with emphasis). The Office Action cites col. 1 lines 15-20 of Ozur to define a register set. However, as can be seen, Ozur only discloses a thread possessing “a program counter, a register set and its own private stack.” There is no suggestion that this register set is any more than a traditional general purpose register set for a thread, and furthermore, Ozur does not suggest use of the register set to identify a trigger event or that the register set is user-addressable.

The Office Action relies on Hogle for user-defined trigger events at col. 14-28. However, Hogle only discloses that “the operating system determines which thread should be run and which should be suspended,” (col. 1 lines 21-23). First, note that often an operating system may be running at a privileged level, i.e. privileged access to hardware, not a user-level. Second, there is no mention in Hogle that a user programmable registers “identify a user-defined trigger event.” In fact, the only discussion of condition for a thread to awake is at col. 5 lines 39-46, which discusses a synchronization object, such as a semaphore, going through a state transition. However, Hogle does not disclose that a register identifies a trigger or that a register identifying the trigger is user-programmable. As a result, applicant respectfully submits that claim 1, as well as its dependent claims, are now in condition for allowance, as Ozur and Hogle do not disclose all the elements of applicant’s claim 1.

Similarly, applicant’s amended claim 14 includes, “a processor including raw event detection logic to detect at least one raw event, a user-addressable register to specify a user-defined trigger event based on the at least one raw event.” Note first that Ozur only discloses a server including RPC mechanism relied upon in The Office Action, and not a processor including... Furthermore, as discussed above, neither Ozur or Hogle disclose “a user-addressable register to specify a user-specified trigger event,” as described in applicant’s claim 14. In fact, Ozur only describes a main thread determining it requires helper threads to assist and utilizing an operating

system utility to create first, second and third helper threads (col. 4 lines 59-67). Additionally, as described above, Hogle only discloses that an operating system determines which thread's are to be active and which are to be suspended. Consequently, neither discloses a user-addressable register to specify a user-defined trigger event, as in applicant's claim 14. Therefore, applicant respectfully submits that amended claim 14, as well as its dependent claims are now in condition for allowance.

Applicant's claim 21 includes, "invoking a second thread on the single-threaded processor **without operating system intervention**," (claim 21 with emphasis). The Office Action relies on col. 1 lines 31-37 of Ozur for spawning of a helper thread. Here Ozur states, "a called thread sometimes creates helper threads to help in processing the call." In col. 4 lines 59-68 Ozur describes this process:

In the course of processing the RPC call from the calling client thread 28, for example, the server thread 34 may determine that it requires helper threads to assist in the processing of the original RPC call 31. The called server thread 34 makes calls to the RPC mechanism 29 which, in turn, calls the operating system utility 33. The operating system utility creates the first, second and third helper threads 38, 40 and 42, and the respective second, third and fourth TEBs 46, 48 and 50. The RPC mechanism 29 passes the call handle from the first TEB

As can be seen, Ozur explicitly requires intervention of an operating system for creation of a helper thread, i.e. RPC mechanism 29 ... **in turn calls the operating system utility 33(, which)...creates the first, second and third helper threads**. Therefore, an explicit and essential teaching of Ozur is to utilize the operating system for creation of threads. As a result, any combination with Ozur of a reference that discloses non-OS thread creation would be impermissible, as OS thread creation is an essential and explicit teaching of Ozur. Moreover, Hogle does not disclose user created threads. As a result, applicant respectfully requests that claim 21, as well as its dependent claims, are now in condition for allowance.

Similar to the discussion above, applicant's newly added claim 28 includes, "**user-programmable event logic** coupled to the event detection logic **to indicate a user-defined trigger event...** the thread switch logic... to spawn a helper thread **without operating system intervention,**" (new claim 28 redacted with emphasis). As discussed above, neither Ozur or Hogle discloses user-programmable event logic to indicate a user-defined trigger or thread switch logic to spawn a helper thread without operating system intervention. As a result, applicant respectfully submits that newly added claim 28, as well as its dependent claims, are now in condition for allowance.

If there are any additional charges, please charge Deposit Account No. 50-0221. If a telephone interview would in any way expedite the prosecution of the present application, the Examiner is invited to contact David P. McAbee at (503) 712-4988.

Respectfully submitted,
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